

**Montana Board of Oil and Gas Conservation  
Environmental Assessment**

**Operator:** Continental Resources, Inc.  
**Well Name/Number:** Goodman 1-35H  
**Location:** SE SW Section 35 T26N R56 E  
**County:** Richland, **MT;** **Field (or Wildcat)** W/C (Bakken Horizontal)

**Air Quality**

(possible concerns)

Long drilling time: No, 25 to 35 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick rig to drill a single lateral horizontal Bakken Formation test, 20,044MD; 10098'TVD.

Possible H<sub>2</sub>S gas production: Slight chance H<sub>2</sub>S gas from Mississippian Formations.

In/near Class I air quality area: No, closest Class I air quality area is the Fort Peck Indian Reservation, about 11 miles to the northeast from this location.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

☒ Air quality permit (AQB review)

☐ Gas plants/pipelines available for sour gas

☐ Special equipment/procedures requirements

☐ Other: \_\_\_\_\_

Comments: No special concerns – using triple rig to drill a single lateral horizontal Bakken Formation test. If there is an existing gathering system for natural gas in the area, then associated gas can be gathered or if no gathering system nearby limited amount of gas can be flared under Board Rule 36.22.1220.

**Water Quality**

(possible concerns)

Salt/oil based mud: Yes to intermediate casing string hole to be drilled with oil based invert drilling fluids (oil/water ratio of 70/30 to 80/20). Horizontal lateral will be drilled with brine water. Surface casing hole will use freshwater and freshwater mud system (Rule 36.22.1001).

High water table: No high water table anticipated at this location.

Surface drainage leads to live water: No, nearest drainage is Buckley Creek a tributary drainage to Hardscrabble Creek, about 1/4 of a mile to the north.

Water well contamination: None, closest water well is about 3/4 of a mile to the north. Depth of the stock water well is 92'. Surface hole will be drilled with freshwater and freshwater mud system, Rule 36.22.1001. Surface casing will be set at 1800' and cemented to surface.

Porous/permeable soils: No, silty sandy clay soils.

Class I stream drainage: No Class I stream drainages in the area of review.

Mitigation:

☐ Lined reserve pit

☒ Adequate surface casing

☐ Berms/dykes, re-routed drainage

☒ Closed mud system

☒ **Off-site disposal liquids (in approved facility)**

X Other: Lined cuttings pit (16 mil pit liner) will be used since this is a closed loop mud system to be employed.

Comments: 1800' of surface casing enough to cover the base of the Fox Hills and cemented to surface adequate to protect freshwater zones, Rule 36.22.1001.

### **Soils/Vegetation/Land Use**

(possible concerns)

Stream crossings: No stream crossings anticipated.

High erosion potential: no erosion potential cut and fill slopes are minimal at this nearly flat location.

Loss of soil productivity: No, location will be restored after drilling if unproductive. If productive, unused portion of this drilling location will be restored.

Unusually large wellsite: No a large wellsite, 450'X380' location size required for a single well.

Damage to improvements: Slight, surface use is cultivated land.

Conflict with existing land use/values: Slight

Mitigation

     Avoid improvements (topographic tolerance)

     Exception location requested

  X   Stockpile topsoil

     Stream Crossing Permit (other agency review)

  X   Reclaim unused part of wellsite if productive

     Special construction methods to enhance reclamation

     Other \_\_\_\_\_

Comments: Access will be over existing county road #338. About 1300' of new access road will be upgraded into this location off the existing well road. Cuttings will be buried in the lined cuttings pit. Oil based drilling fluids will be recycled. Reserve pit fluids will be hauled to a commercial disposal. Pit will be allowed to dry and then closed by filling and mixing in with clay subsoils. No special concerns.

### **Health Hazards/Noise**

(possible concerns)

Proximity to public facilities/residences: Closest residences are about a mile to the northwest. The town of Culbertson Montana is about 14 miles to the north.

Possibility of H2S: Slight chance of H2S from Mississippian Formations.

Size of rig/length of drilling time: Triple drilling rig/short, 25 to 35 days drilling time.

Mitigation:

  X   Proper BOP equipment

     Topographic sound barriers

     H2S contingency and/or evacuation plan

     Special equipment/procedures requirements

     Other: \_\_\_\_\_

Comments: Adequate surface casing cemented to surface with an operational BOP stack (annular and double ram (pipe and blinds) rated for 5,000 psig) should mitigate any problems, Rule 36.22.1014.

### **Wildlife/recreation**

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None

Proximity to recreation sites: None

Creation of new access to wildlife habitat: No

Conflict with game range/refuge management: No

Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Least Tern, Whooping Crane and Piping Plover.

Candidate specie is the Sprague's Pipit and the Greater Sage Grouse. NH tracker website indicate one species of concern in this township and range- the Whooping Crane.

Mitigation:

\_\_\_ Avoidance (topographic tolerance/exception)

\_\_\_ Other agency review (DFWP, federal agencies BLM, DSL)

\_\_\_ Screening/fencing of pits, drillsite

\_\_\_ Other: \_\_\_\_\_

Comments: Private cultivated surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern are discovered at this location. No concerns.

### **Historical/Cultural/Paleontological**

(possible concerns)

Proximity to known sites: None identified.

Mitigation

\_\_\_ avoidance (topographic tolerance, location exception)

\_\_\_ other agency review (SHPO, DSL, federal agencies BLM)

\_\_\_ Other: \_\_\_\_\_

Comments: Private cultivated surface lands. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite.

### **Social/Economic**

(possible concerns)

\_\_\_ Substantial effect on tax base

\_\_\_ Create demand for new governmental services

\_\_\_ Population increase or relocation

Comments: Wildcat well. No concerns

### **Remarks or Special Concerns for this site**

Continental will drill a single lateral Bakken Formation horizontal well test, No special concerns.

### **Summary: Evaluation of Impacts and Cumulative effects**

No significant long term impacts expected, some short term impacts will occur.

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I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the

human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Thomas Richmond

(title:) Administrator

Date: January 29, 2014

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website

(Name and Agency)

Water wells in Richland County

(subject discussed)

January 29, 2014

Montana Natural Heritage Program Website

(Name and Agency)

Heritage State Rank= S1, S2, S3 T26N R56E

(subject discussed)

January 29, 2014

(date)

Montana Cadastral Website

(Name and Agency)

Surface Ownership and surface use

(subject discussed)

January 29, 2014

(date)

If location was inspected before permit approval:

Inspection date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Others present during inspection: \_\_\_\_\_